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Observation of a resonant-type ground state in graphene intercalated with cerium

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The interaction between a magnetic impurity and metallic background provides a key to understand many-body interaction and its effect on the electro-magnetic properties of a material. Such an interaction leads to the formation of a resonant-type many-body ground state, so-called Kondo resonance, that is enhanced at low temperatures. We investigate temperature-dependent electron band structure of graphene intercalated with cerium, which provides metallic electrons and localized 4f electrons, respectively. Cerium intercalation induces new spectral weight in graphene band structure that becomes stronger at low temperature, which is attributed to the formation and development of the new many-body ground state.

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